

BLIND TESTS
of
BRASS PIPES



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CHASE BRASS & COPPER CO.
INCORPORATED
WATERBURY, CONNECTICUT

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Incorporated
Waterbury, Connecticut

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BLIND TESTS OF BRASS PIPES

Twenty-four plumbers under competent supervision tested four well-known but unidentified brass pipes. This book tells what they found out.

by Orlan, C. O. Frary, W. D. and Harry Gervais of Chicago.

Brass Pipe Tests at the Paterson Vocational School

THE Paterson Vocational School, Paterson, N. J., said to be one of the oldest and largest trade schools in the Garden State, is sponsoring a series of tests on the workability of brass pipe under the direction of Engineer S. N. Martin, a prominent member of the American Society of Sanitary Engineering.

The tests, which started October 1 and are to run for a period of six weeks, in which the 88 students of the night plumbing class are participating, covers testing of four grades of $\frac{3}{4}$ -inch brass pipe, and includes testing with hack saws; cutting with square-end cutters, threading by hand dies and bending in bending devices. The time required by each student to perform the test is recorded and the resiliency of the pipe under the testing conditions is discussed with much interest by the student body.

Professor Joseph M. Ackerman and Instructors John Peters, Robert Hargraves and Thomas Bruce are in charge of the class.

The pipe testing experiment is only one of the many novel features which Managing Director James F. Mason of the school is constantly offering for the benefit of his many vocational classes.

Clipping from Plumbers Trade Journal

November 1, 1927

THE PROOF OF THE PUDDING

FOR many years we have been saying "Alpha Brass Pipe is a better brass pipe." We believed it.

Our research department and metallurgists proved it to us by photomicrographs, by bending and threading tests, by inspections and comparisons of other good brass pipes.

"Other brass pipes are good," they said, "but Alpha is better yet. It bends cold, and easier. It threads easily, and with better threads. It resists corrosion better. You will notice in this photomicrograph that all the crystals are Alpha crystals and this homogeneous structure gives the metal a great resistance to corrosion. If Beta crystals were present it would be less resistant."

Jobbers told us it was better, it gained them satisfactory plumbing customers.

Plumbers told us they had never seen a pipe like it. Letters, voluntary letters, praising Alpha for its good qualities, began to accumulate in our Advertising Department.

Architects specified "Alpha—or equal."

We said to ourselves: If Alpha is really as good as people say, then it must be evident, even to those people who don't know it by name, or trade-mark, or reputation, who have never used it before, and who can test a piece of Alpha and then test other good brass pipes along with it. If it's the best, then they'll pick it out and tell us why they did.

Why don't we arrange a big blind test of brass pipes and see whether real practical plumbers will choose Alpha Brass Pipe even if it's mixed up with other good pipes—

and here's what happened.

BLIND TESTS OF BRASS PIPES

Preliminary Test

TO SATISFY ourselves that plumbers really could tell the difference between the working qualities of Alpha and other brass pipes, we first bought different makes of brass pipe in the open market and took them to a number of plumbers, asking them to choose the one they liked the best.

A half dozen plumbers cut, threaded and bent the different pipes and told us that they liked Alpha Brass Pipe the best. This showed us that plumbers were able to recognize Alpha Brass Pipe by its working qualities alone. We decided to go further.



Plumbers in the shop of the Bedford Branch of the Y. M. C. A., Brooklyn, N. Y., where the second blind test was made. Mr. C. E. Conway, Educational Director, who supervised the testing, is indicated by the arrow.

Second Blind Test

Arrangements were made at the Bedford Branch Y.M.C.A., Brooklyn, New York, to set up a specially designed bench and to have tests performed by helpers, who were taking night courses to become journeymen. The choice of these men was par-

ticularly significant since they are the men who actually cut and thread most of the pipe on the job as a part of their daily work. Nobody knew the identity of the pipes, so prejudices in favor of some particular brand did not influence the result.

The Result of the Brooklyn Test

Eight men worked in the Brooklyn tests and six out of the eight rated Alpha as the best cutting pipe, the best threading pipe, and the best bending pipe. The average time of cutting was less than for any other competing pipe.

These results were just interesting enough to cause us to decide to go into the matter with much greater care and, accordingly, it was decided to run another test, this time in the Paterson, New Jersey, Vocational School.

Tests at Paterson

Similar arrangements were made with the Paterson Vocational School as had previously been made with the Bedford Branch of the Y. M. C. A., the only difference being that specifications were more carefully written and more complete supervision was provided by an engineer assigned

to the job.* Ten men were chosen to make the tests.

The specifications for testing procedure covered cutting with a hack saw, cutting with a square-end cutter, threading with a Nye die and bending with a Henderson conduit bender.

*Engineer S. N. Martin, a prominent member of the American Society of Sanitary Engineering, was present during every test and, together with Professor J. F. Mason and the plumbing instructor Mr. J. M. Ackerman, checked each testing operation and made a most careful examination of all the results. We owe the accuracy and completeness of these tests to the fine cooperation and the help of these three men. (See page 8.)

THE TEST PROCEDURE

Bought Pipes in Open Market

Four standard brands of brass pipe, made by different competing manufacturers, were bought in the open market.

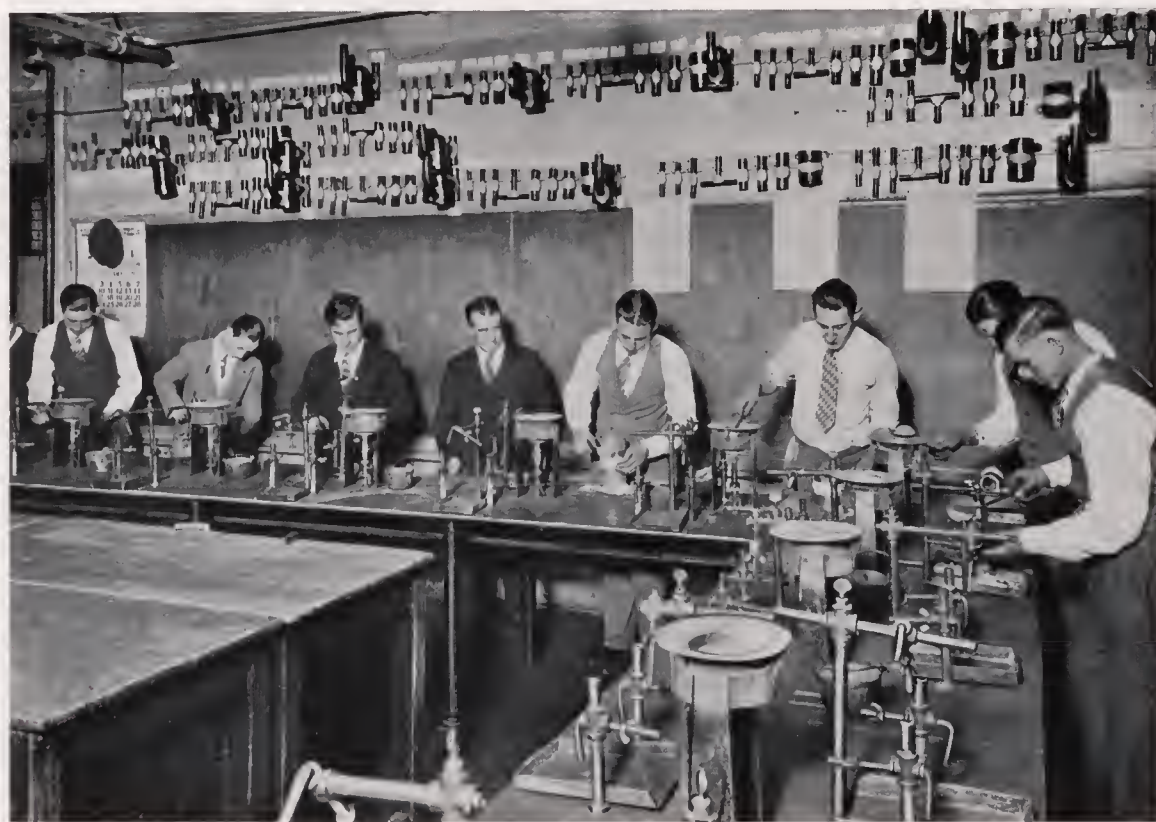
Forty pieces, 10 of each make, of $\frac{3}{4}$ in. standard brass pipe were furnished for these tests. We removed all identification marks and numbered them consecutively from 1 to 40. The pipes were made up in 10 bundles, each bundle containing four different makes of pipe. The order of testing the different makes was varied as much as possible, so that no particular type of

pipe would always be the first one worked, when the operator might be least tired.

Hard to Tell Best Pipe

When comparing two different pipes in a practical test, many factors besides the pipe enter into the result.

There is a great difference in results between the use of a new saw and a worn one, or a die clogged with chips and a clean one, between a long leverage on a bend and a short one. Any of these factors may



Plumbers in the shop of the Paterson Vocational School, Paterson, N. J., where the latest blind tests were made

easily offset any advantages or disadvantages of the different pipes.

Proper Tools Required

To reduce the possibility of errors to the lowest possible point, a special bench equipped with standard tools was built for the test. (See page 11.) The equipment for making these tests consisted of the following:

- Bench and vise
- Beaver Square-end Cutter
- One dozen blades, or cutter sets, for the same
- Stop watch
- Small brush
- $\frac{3}{4}$ " Nye die and die stock
- Pistol-grip hacksaw frame
- Four dozen blades for the same
- Magnifying glass
- Henderson Conduit Bender, firmly attached to the bench

All the tests were made according to a standard method, and under identical conditions, as shown on pages 12, 14, 16 and 18.

Results of Tests

The performance of the ten men who did the testing was extraordinarily consistent, as was also the performance and rating of Alpha Pipe. The rating of other pipes, although fairly consistent, varied much more than the variation in the Alpha results.

Alpha Brass Pipe led the other pipes by a liberal margin in ease of work, time required to do the work, and quality of the resulting job. The details of the various tests are summarized under group headings on the following pages. A summary of the results, signed by the engineer who supervised the testing, is shown on the opposite page.



Mr. S. M. Martin
Test Engineer



Professor J. F. Mason
Director of Vocational Training



Mr. J. M. Ackerman
Plumbing Instructor

The men who supervised the tests at the Paterson Vocational School

SUMMARY

The results of the tests show conclusively that

- 1 Type A* brass pipe, cut the best thread.
- 2 Type A brass pipe, was the easiest to work.
- 3 Type A brass pipe took the least time to work.
- 4 Type A brass pipe gave more uniform results, with different grades of workmen, than any other.
- 5 The quality of the hacksawing and the square-end cutting operations seemed to be about the same for all pipes tested.
- 6 The quality of bend seemed to be good on all types of pipe tested. No cracks were visible to the naked eye, or under a small, hand magnifying glass.

Respectfully,

(Signed) STEPHEN M. MARTIN

*When Mr. Martin made this report he did not know that "Type A" was Alpha Brass Pipe. Nor was the pipe named Type A at that time. The pipe that led in the tests was called A, the others B, C and D in the order of their results.

TABULATING THE DATA FROM THE TESTS

IN GENERAL, all tests comprised three parts: 1st, the timing of the operation; 2nd, the man's report on the amount of labor involved; 3rd, the inspection of the work and its rating as to quality.

Accuracy of Tests

Since the method of doing the tests was definitely specified and all tests were supervised by the engineer in charge as well as by the head of the school, the only thing that had to be observed was the exact time required for doing the work, in order to get the speed. A stop watch was used. The accuracy of these tests is checked by the consistency of the results. (See page 21.)

Putting "Speed of Working" Into Figures

In order to visualize the general performance of the different pipes, the shortest and the longest time taken are tabulated separately. The average time, also given, was obtained by adding together the time taken by each one of the testers and then dividing by the number of testers.

Translating "Ease of Working" Into Percentages

The ease with which any given test could be done was judged by the operator himself. When he had finished a test, he stated that it was "easy" "medium," or "hard." If it came between any two ratings, he called it "easy-medium," or "medium-easy," "medium-hard," or "hard-

medium." In order to make it possible to tabulate these statements, we gave these classifications the following values:

Easy	100%
Easy-Medium	95%
Medium-Easy	85%
Medium	80%
Medium-Hard	75%
Hard-Medium	65%
Hard	60%

These percentages were then added up and divided by the number of testers, giving the average final result.

Quality of Work

While the quality of the results of cutting and bending was generally good, there was a great difference in the quality of the threads produced. These were carefully examined by the engineer and the man in charge of the classes, as well as the workmen themselves, and a rating decided upon. The threads were rated in percentage. The bends were all good because the machine in which they were made is so constructed that it is practically impossible not to make a smooth, full bend.

General Workability

In order to measure the general workability of the pipes, we took the total time required to make two cuts, cut two threads, and make one bend. This did not include time spent in getting work ready, but merely the actual cutting, actual threading and actual bending time.

The detailed figures of the tests are set forth on the following pages.



The model bench
Special bench, equipped with standard
tools, which was used for all the tests
at Paterson.

NAME W. POLHEMUS (A) No. 38-6101 SHEET NO. 8
ADDRESS 204 DYNODE AVE
EMPLOYED AT PATERSON TRADE SCHOOL (TOWNSHIP PLAINFIELD)
ADDRESS _____

#33 Sample No. 1
① Threaded EASY Hard, Medium, Easy (State which) VERY GOOD THD. 90% Time 20 Seconds
② Cut HACKSAW EASY Time 29
③ Remove Sq. End Cut EASY CLEAN Time 17
④ Bent MED SMOOTH BEND Time 10
Remarks _____
76 TOTAL

#34 Sample No. 2
① Threaded HARD FAIR THD 75% Time 24
② Cut HACK HARD KNIFE EDGE BURR Time 61
③ Remove Sq. End Cut HARD TEARING Time 29
④ Bent MED. SMOOTH BEND Time 10
Remarks _____
124 TOTAL

#35 Sample No. 3
① Threaded MED. FAIR THD 75% Time 24
② Cut HACK MED. Time 41
③ Remove Sq. End Cut MED. BURY - TORN Time 22
④ Bent EASY SMOOTH BEND Time 10
Remarks _____
97 TOTAL

#36 Sample No. 4
① Threaded EASY-MED. GOOD THD 85% Time 20
② Cut HACK MED-EASY Time 32
③ Remove Sq. End Cut MED. TENACIOUS BURRS - TORN Time 24
④ Bent HARD SMOOTH BEND Time 10
Remarks _____
86 TOTAL
Willard Polhemus

A typical report sheet

Report of results of four operations on the four different brass pipes, signed by the man who made the tests.

One of these sheets was made out for each of the ten men who participated in the tests at Paterson. The figures given in this book are all based on these sheets.



CUTTING WITH HACKSAW

Position of Pipe

Edge 10 inches from face of vise.

Position of Tool

Hacksaw blade 3 inches from end of pipe.

Position of Operator

Chest at angle of 45°, with pipe on

either side depending on operator's convenience.

Method of Operation

At a signal, commence cutting with natural stroke. Cut through to the very end. Don't break off the piece by hand.

Condition of Tool

New 12-inch blade to be used for each sample.

Method of Comparison

- (1) Time in seconds.
- (2) "Feel" or fatigue of operator.

CUTTING QUALITIES OF BRASS PIPES

(HACKSAW)

IN USING the hacksaw, a new blade was used for each cut, so that there could be no difference due to the wearing of the blade. It is not recommended that a hacksaw be used for cutting brass pipe, any more than for cutting steel pipe or iron pipe. However, it is useful in that it indicates fairly accurately the comparative ease and time of working and, therefore, makes a fairly simple test for comparing different kinds of pipe.

The shortest and longest time taken by any of the men in cutting the various pipes, as well as the average time of all the men, are shown in the table in next column. Assuming that the pipe which cuts the easiest and the quickest is used, and that the number of cuts that could be made in a given time is 100%, comparative percentages are given for the competing pipes.

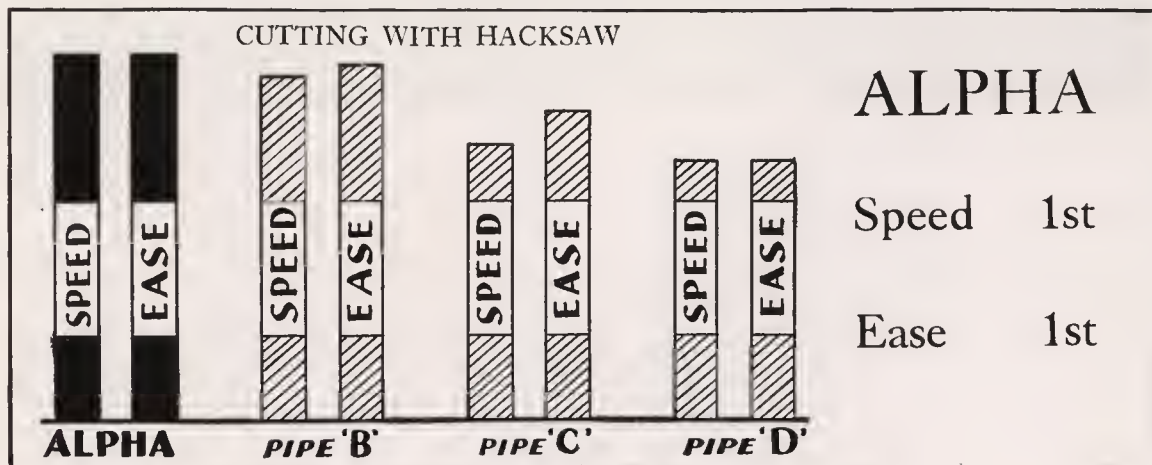
To translate this into definite numbers,

100 cuts of $\frac{3}{4}$ -inch pipe could be made on Alpha pipe, while 93 cuts were being made on pipe B, which was the next best.

The ease of cutting, as given in the last column of the table, was determined by the men who did the work.

Kind of Pipe	Cutting Time, Seconds			Cuts in given time %	Ease of Cutting %
	Quickest	Slowest	Average		
Alpha	12	38	29.3	100	100
B	12	58	31.7	93	96
C	12	108	40.4	73	81
D	17	88	43.7	69	68

In order to show the difference between Alpha and the competing brass pipes, we have shown in the graph below the average results for speed and ease of cutting. The vertical height of each bar indicates the percentage found in the tests. The highest quality is rated at 100%, and the percentages of the other brass pipes are shown in the heights of their respective columns.





CUTTING WITH SQUARE END CUTTER

Position of Pipe

End of pipe 10 inches from face of vise.

Position of Tool

Knife blades of cutter placed 3 inches from end of pipe. Guard follower to be screwed down to the surface of pipe. Handles horizontal. Adjust self-feeding device by turning screw down one and one-half turns.

Position of Operator

Natural stance at left of cutter so that

left side is toward the vise on bench and chest is parallel with pipe.

Method of Operation

With right hand up, holding top arm of cutter, and with left hand on the lower arm, proceed to turn cutter, pulling up with left hand and pushing with right. Shift hands, push up with left hand and push down with right to complete 180° cut. Continue to turn the cutter in this manner until the cut segment drops off.

Condition of Tool

The blades of the knife should be free from chips and turnings. The method of cutting should be dry. A new set of cutters should be used for each set of pipes.

Method of Comparison

- (1) Time in seconds.
- (2) "Feel" or fatigue of operator.
- (3) Examination of pipe upon completion of all tests to determine:
 - Quality
 - Burrs

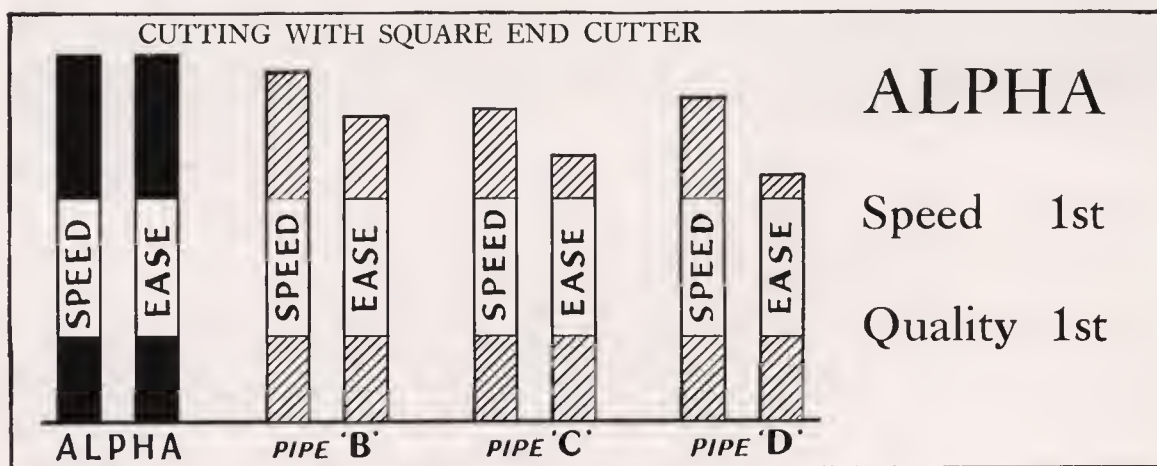
CUTTING QUALITIES OF BRASS PIPES

(SQUARE END CUTTER)

A SQUARE END cutter was used for this test. It was not necessary to change the blades as the tool is practically automatic, requiring merely to be set on the pipe, adjusted to size and turned at constant speed, exactly as threads are cut

with a die. Of course, it is much faster than a hacksaw. Alpha Brass Pipe was found easier to cut and was also found to cut more quickly than any of the other pipes. The nearest competing pipe took a little longer and was much harder to cut.

Kind of Pipe	Cutting Time, Seconds			Cuts in given time %	Ease of Cutting %
	Quickest	Slowest	Average		
Alpha	8	18	14.2	100	100
B	10	24	15.5	97	84
D	14	22	17.0	89	67
C	11	29	17.6	86	73





THREADING

Position of Pipe

End 8 inches from the face of vise.

Position of Tool

Placed on the pipe with die teeth close to edge of pipe ready to bite in under pressure and slight movement.

Position of Operator

Facing the die stock on the pipe. Right hand, shoulder high, on one arm of the die stock; left hand down on lower arm of die stock.

Method of Operation

At the signal from operator, proceed to turn tool to the right, applying, at first, pressure to force die on the pipe. For the sake of comparison, operator should continue to stand and revolve tool in front rather than to step to one side using the hand-over-hand method to turn the tool. The die to be turned until the pipe is flush with front face of die, thus giving a uniform length of thread.

Condition of Tool

After each operation the die should be run over a steel pipe to clean the thread. All chips are to be removed with a stiff brush.

Method of Comparison

Time in seconds.
"Feel" or fatigue of operator.
Examination of pipe upon completion of all tests to determine:
Quality of operation.

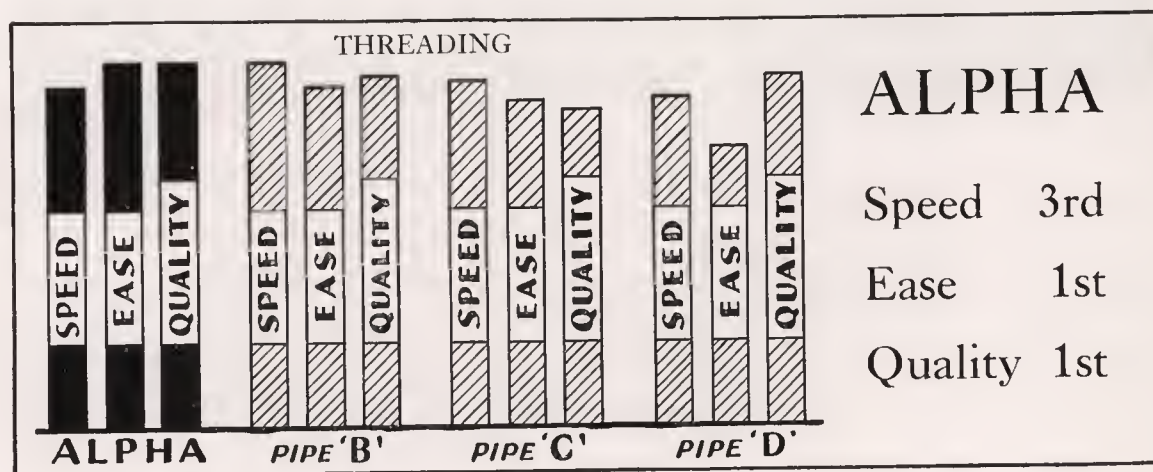
THREADING QUALITIES OF BRASS PIPES

WHILE Alpha Brass Pipe led in ease of threading and in quality of threads produced, it did not lead in the time taken to cut the threads. In fact, it took 1.6 seconds longer to cut threads in Alpha than it did in the best competing pipe, Type B, as shown in the accompanying table. But it is important to notice that the men doing the work reported that it was easier, that is, there was less pull in the die and less effort required, to cut threads in Alpha than in any competing pipe. It is interesting to

see that, while Type D pipe took only 0.8 seconds longer, it was much harder to thread. Seven of the ten workmen said that Type D was the hardest, while eight of the workmen said that Alpha was the easiest to thread.

Taken all in all, the difference in time between the different pipes on the threading operation is too slight to be of any consequence. However, the ease of working and the quality of the resulting threads are very important, particularly the quality of the threads, in which Alpha was first.

Kind of Pipe	Threading Time in Seconds			Threads in given time %	Ease of Threading %	Quality of Threads %
	Quickest	Slowest	Average			
B	13	22	19.3	100	92	96
C	17	24	20.4	95	89	87
Alpha	17	24	20.9	93	100	100
D	16	26	21.7	89	75	95





BENDING

Position of Pipe

Set and locked in the former with bending wheel against pipe. End of pipe flush with edge of bending machine.

Position of Operator

Both hands on the bending arm at end.

Pulling action to be exerted on bending arm.

Method of Operation

Complete a 90° bend.

Method of Comparison

Time in seconds.

"Feel" or fatigue of operator.

Examination of pipe upon completion of tests to determine:

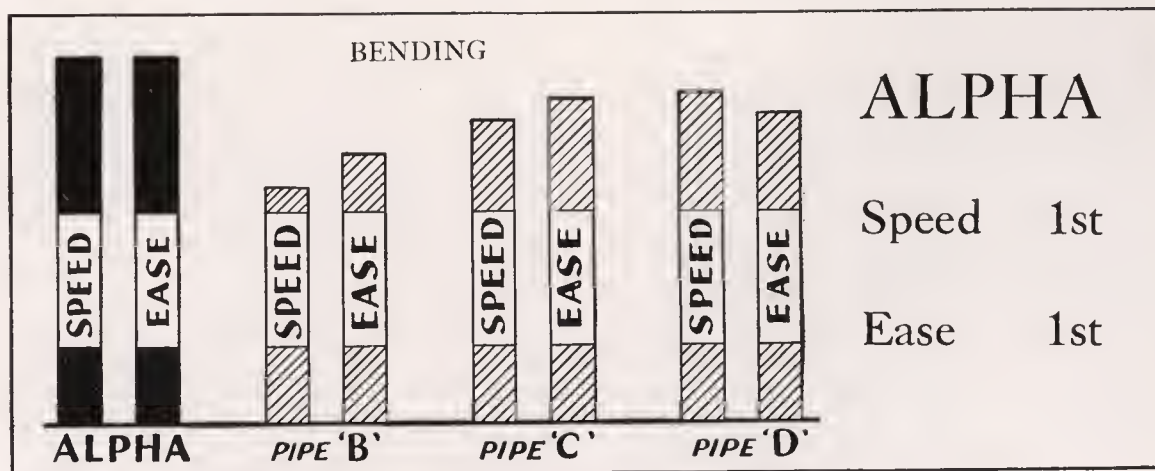
Smoothness of surface—any breaks in ribbing to be noted with magnifying glass.

BENDING QUALITIES OF BRASS PIPES

THE bending tests were made with an elbow former and according to very accurate specifications. The machine practically eliminated the skill of the workmen and, therefore, the time taken was an approximate measure of the ease of bending.

An interesting result of this test was the comparatively short time taken to make a bend with brass pipe. The same operation was later performed with steel or wrought iron which was found to take from two to four times as long as brass pipe.

Kind of Pipe	Bending Time in Seconds			Bends in given time %	Ease of Bending %
	Quick-est	Slowest	Average		
Alpha	3	10	5.0	100	100
D	3	10	5.6	89	85
C	3	12	6.1	82	89
B	3	17	7.8	64	73

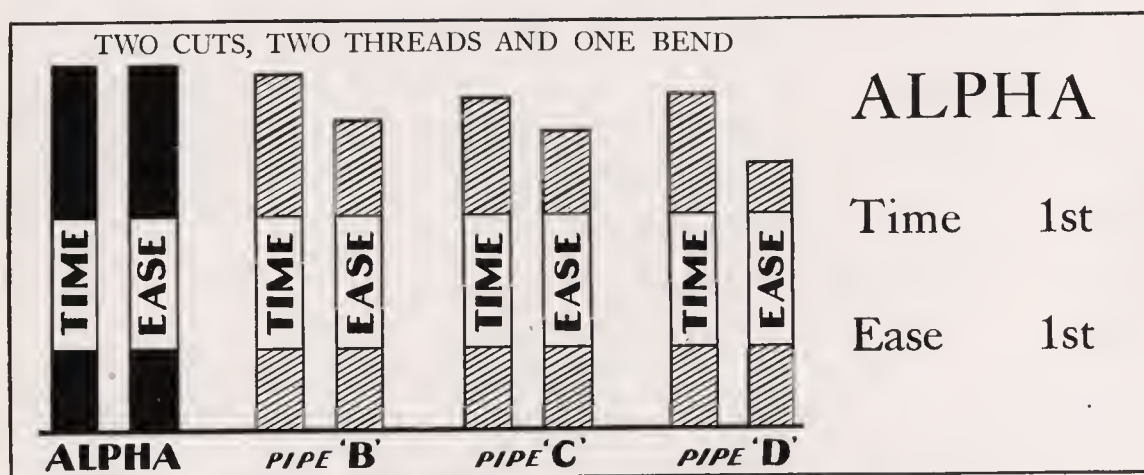


WORKING QUALITIES OF BRASS PIPES

IN ORDER to get a general basis of comparing the working qualities of the different pipes under test, it was decided to take the total time required to make two cuts, cut two threads, and make one bend, and use the relation between the time required to do these operations and the ease with which they could be done, as a measure of the general workability of the

pipes. The accompanying table shows the results, and which are also shown graphically in the diagram.

Kinds of Pipe	Time in Seconds				Per-cent	Ease Per-cent
	2 cuts	2 Threads	1 bend	Total		
Alpha	28.4	41.8	5.0	75.2	100	100
B	31.0	38.6	7.8	77.4	97	85
C	35.2	40.8	6.1	82.1	92	82
D	34.0	43.4	5.6	83.0	91	74



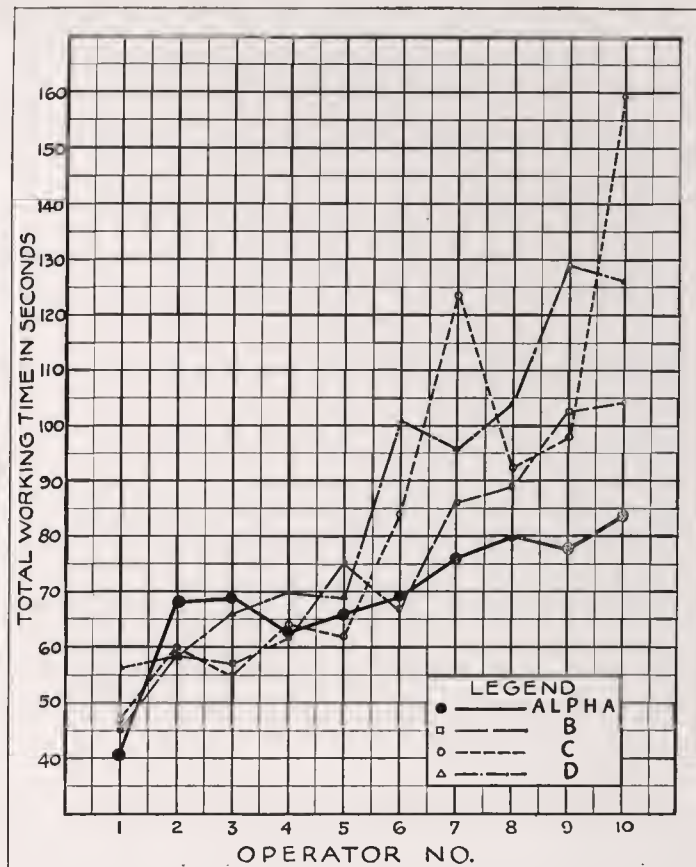
SKILL OF WORKMEN

IT IS interesting to note that the skill of the man doing the work affects the result less with Alpha than with the other brass pipes. That is, the speed of cutting, threading or whatever the operation may be, varies less with the individual in the case of Alpha Brass Pipe than with other pipe.

It is also of interest that the variations due to difference in skill of the workmen are greater when using the hacksaw than

when using the square-end cutter. This is one more reason why the square end cutter or a pipe cutter is better than a hacksaw. Not only is the pipe cut more quickly this way but it is cut at a more uniform speed, regardless of the skill or industry of the workmen.

In order to show the difference between Alpha and other pipes as affected by the characteristics of the workmen, we reproduce on page 21 a chart showing the time



The figures 1 to 10 represent the ten workmen while the figures to the left (40 to 160) show the time in seconds. Notice that the black line (Alpha) is more regular than the lines representing other brass pipes. In other words the average workman does better average work with Alpha Brass Pipe.

in seconds required to cut, thread and bend each kind of pipe, listing the men who did the work from left to right.

For instance, No. 1 was the best man, because he took the shortest time with all the different kinds of pipe. He took about the same time with Alpha, Type B and Type C, but a little longer with Type D.

No. 10 was the poorest man. He took the shortest time with Alpha, a longer time with Type B, a considerably longer time with Types C and D. The best man took 41 seconds with Alpha, 45 seconds

with Type B, 47 with Type C and 57 seconds with Type D. The poorest man took 84 seconds with Alpha, 104 seconds with Type B, 160 seconds with Type C and 126 seconds with Type D. Since none of the men used in this test could be classed as poor workers, the test demonstrates that Alpha produces an even greater saving with the average worker than it does with the best worker, and that *whether the workman is good or average, he does quicker work and gets better results with Alpha Brass pipe than with other brass pipes.*

FOREST HILLS PLUMBING CO., INC.

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HEATING BOILERS
CLEANED AND REPAIRED

PLUMBING AND HEATING
IN ALL ITS BRANCHES
NEW AND REPAIR WORK.

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AUTOMATIC GAS
HOT WATER HEATERS
EXCELSO WATER HEATERS
HOFFMAN RADIATOR
AIR VALVES
GAS RANGES

Chambers
COOKS and B. GAS TURNED OFF

AUSTIN STREET NEAR ROMAN AVENUE

FOREST HILLS, N. Y. April 25, 1928

Chase Brass & Copper Co.,
Waterbury,
Conn.

Gentlemen:

Replying to your letter of April 17, and also to many other letters which we have received but not answered to date, wish to state that we are large users of your brass pipe. We have installed it in some of the large apartment houses in Forest Hills, and also in hundreds of the homes throughout the community which we have done for individuals. We can highly recommend the pipe as we have been using it for the past five years, and to date have not been inconvenienced by any splitting of brass pipe, etc., that we used to encounter with cheap competition pipe which was put on the market by other manufacturers.

The water in our community is very hard on iron and steel pipe and in some cases it doesn't last more than five years and at the most twelve years. Before we purchase any pipe from our jobbers we instruct them that if they cannot furnish us with Alpha Brass, we do not care to use any other inferior grade of pipe.

We believe that your advertising will help us considerably throughout the community, and also that your cartoon advertisements in our window will bring to the public light that we are using the best pipe that is manufactured today. If there is anything that you have in actual pipe display, we would appreciate receiving same.

Trusting that we may hear from you in the near future, we remain

Very truly yours,
FOREST HILLS PLUMBING CO. INC.

J. D. Mittasch
J. D. Mittasch, Pres.



JRM/ER

An Unsolicited Testimonial

WHAT PLUMBERS SAY ABOUT ALPHA BRASS PIPE

THE following quotations are taken from letters received during the months of March and April, 1928, in response to our offer to supply plumbers with Alpha literature. They are wholly

voluntary expressions of opinions from some of our plumbing friends. We did not ask them to write us their opinion of Alpha Brass Pipe, but these and many more letters contained extracts such as the following:

'Am using your pipe, perfectly satisfied with, results.'

R. W. Miller, 1862 Bath Ave., Brooklyn, N. Y.

"We are very well satisfied with Alpha Brass Pipe, and urge its installation."

L. R. Stanford, 2619 N. Fifth St., Harrisburg, Pa.

"We have used your pipe and can highly recommend it."

Nick Emch Machine & Plumbing Co., 335-337 Ferris Ave., Toledo, Ohio.

"We have been using your brass pipe, and have had very satisfactory results."

Berla Brothers, 217 Washington St., Newark, N. J.

"Using 'Alpha' Pipe almost all around now and I am very well pleased with it."

Emil H. Ziegler, 688 Central Ave., Bridgeport, Conn.

"You are right, it's the best pipe for lasting. I intend to get my customers to using it in replacements and new work."

W. J. Brown, Bloomfield Road, Macon, Ga.

"I am a great believer in Chase Brass Pipe. In fact I use no other because I have found it just as you term it—good, easy threading, and when water is turned on the beauty of it

is I have not got to take it apart. Because I have no leaks and time is money every time, and I have used a power of it."

Edward J. Kelley, 2401 Hughes St., Ridgewood, Brooklyn, N. Y.

"We are using Alpha Brass Pipe and recommend its installation at every opportunity."

Frank Schmitt, 1613 Frederick Ave., Baltimore, Md.

"We will gladly recommend Alpha Pipe and anything we can do to help advertise the use of your goods will be a pleasure to us."

S. A. Carter Plumbing Co., 823 Spring Street, Greenwood, S. C.

"We have used Alpha Brass Pipe and would feel honored to have our name used on such advertising matter."

M. S. Overdeer, 206 Emaus St., Middletown, Pa.

"I have been using Alpha Brass Pipe for the last few years and highly recommend its use."

Frank Martin, 72 Anderson Ave., Fairview, N. J.

"I have been using Alpha Brass Pipe on both new and old work and find it satisfactory in every way. We are proud of it."

Earl F. Bentz, 313 Tabor St., Pittsburgh, Pa.

HOW MR. CONNOR OF
LOCKPORT, N. Y. HELPED
SELL ALPHA BRASS PIPE



Young Billie Connor, son of M. A. Connor of Lockport, N. Y. is proud that his father is selling Alpha Brass Pipe.

FACTS ABOUT ALPHA BRASS PIPE

1. *What Alpha Brass Pipe Is*

"Alpha" is a brass pipe that cuts and threads easier. It has a better surface. It can be bent more roundly. It can be expanded when necessary, and it can be used where ordinary brass pipe would fail from extremely corrosive waters.

2. *Manufacture*

Alpha Brass Pipe is made from copper, zinc and lead, and contains 10% more copper and a little more lead than ordinary brass pipe. It is cast from liquid metal in the form of a shell, which is drawn down into long pipes.

(Ordinary brass pipe is pierced from a solid brass billet, but Alpha Brass is too dense an alloy to be pierced and must be cast in the tube form.)

3. *Alpha Brass Alloy*

Alpha Brass is different from other brass pipe alloys. Its metal grain structure contains none of the weakening "Beta" crystals found in other brass pipes, which are the first to corrode. It is composed entirely of "Alpha" crystals, which give the brass an extra resistance to corrosion.

4. *Trade Marked*

The Alpha trade mark is cut *every* 12 inches on all sizes of Alpha pipe.

5. *Surface*

Alpha Pipe has a smooth close-

grained surface that takes a better nickel plate. It has a beautiful natural brass finish.

6. *Bending*

Because Alpha Brass is more ductile, it may be bent without flattening or without any danger of straining or splitting.

7. *Threading*

Alpha Brass Pipe, because it contains more lead, is easier to cut and thread, and clean threads make tight leak-proof connections.

8. *Expansion*

Alpha Pipe will stand a pressure of 9,000 pounds per square inch before bursting and each piece of pipe must pass a water pressure test of 2,000 to 2,500 lbs. Because Alpha Pipe will expand under strain, it is safer to use in case the water inside the pipes freezes.

9. *Guaranteed*

All Alpha Brass Pipe is fully guaranteed for soundness.

10. *Makers*

Chase Companies, Inc. are old makers of brass pipe, and since 1837 have been important factors in the brass industry. They are owners of two large brass mills in Waterbury, Connecticut, and sell their products through their own subsidiary, the Chase Brass & Copper Co., Inc.

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